



October 29-31, 2019 | Novi, MI

# Innovations in Mobility

A REVOLUTIONARY TRANSFORMATION

# CONDITION BASED MAINTENANCE PLUS - ARMY

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# Tank-Automotive and Armaments Command Overview

***TACOM Mission: Develop and Deliver Readiness for ground and support systems globally.***

*Based in Warren, MI*

*19,000+ Employees at 100+ Global Locations*

*Variety of career fields in Acquisition, Logistics and Technology*

*If a soldier eats it, wears it, drives it or shoots it...TACOM supports it!*



# Tank-Automotive and Armaments Command – CBM+ History

2012 CBM+ Pilot Program for Tactical Wheeled Vehicles

2014 Expanded to Stryker Vehicle Pilot

2018 Multiple Smaller Pilots

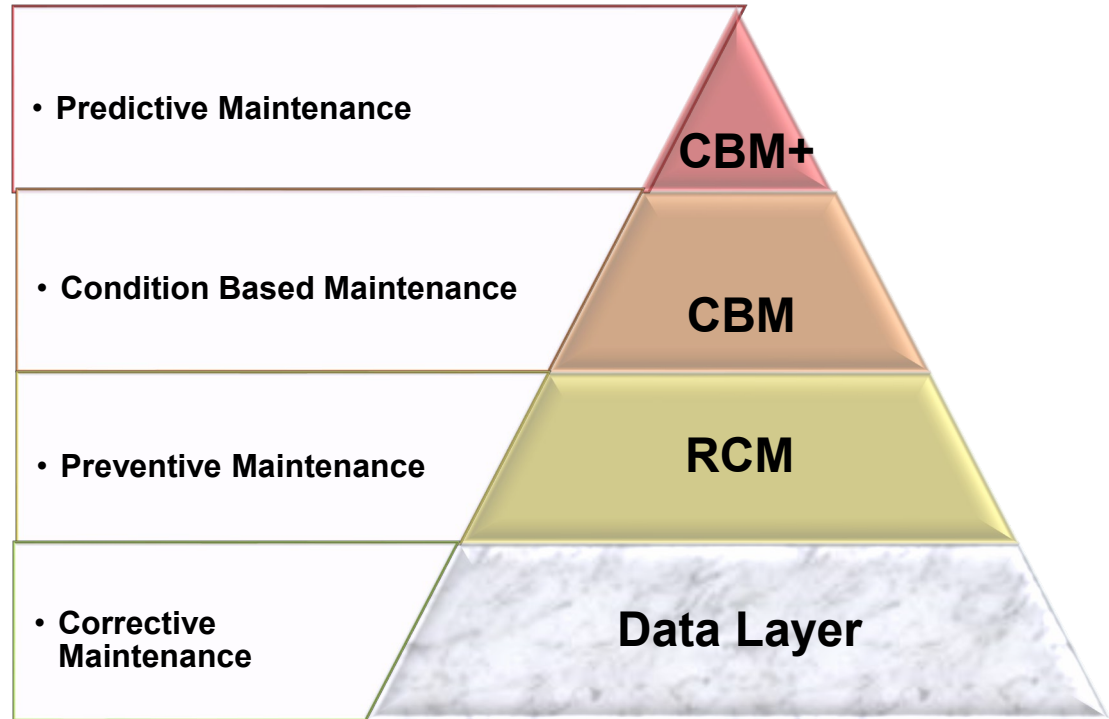
2019 New System Acquisition Fieldings



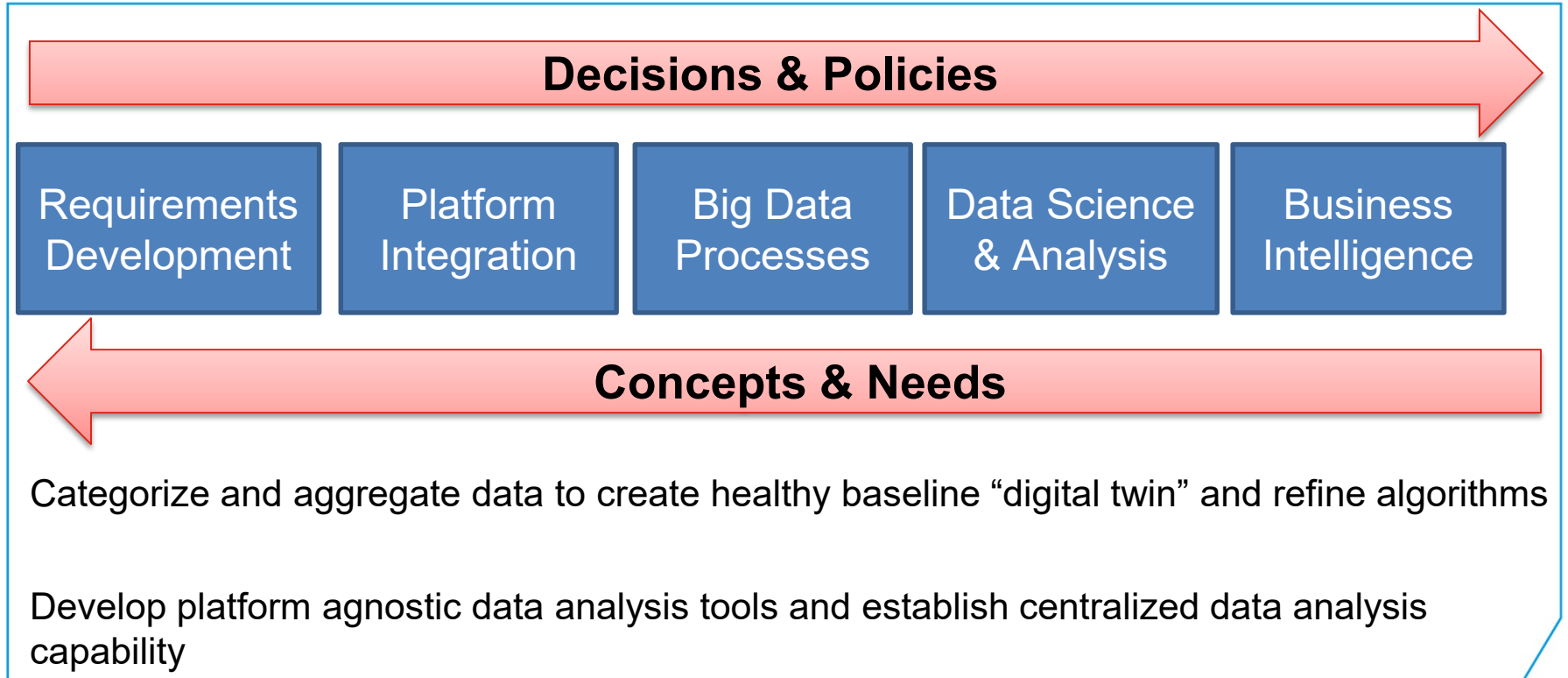
Army Policy and Regulations being updated for CBM+ implementation to achieve CBM+ Full Operational Capability

# Maintenance Concept Evolution

Evolution of Army  
Maintenance Concept

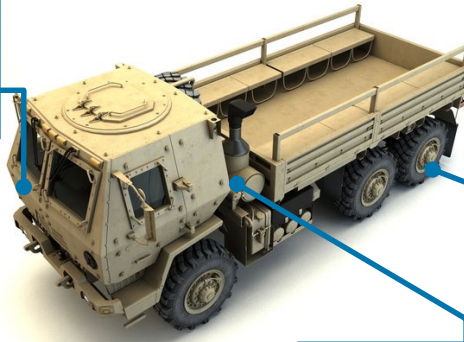
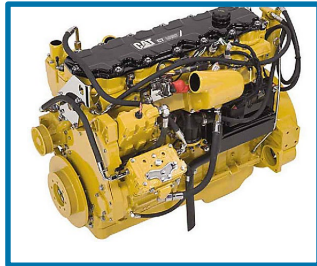


# Road to Predictive Maintenance



# Turning Data into Actionable Information and Modernizing the Motorpool

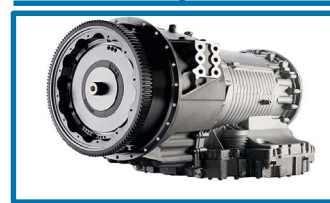
Engine Parameters
Accelerator Pedal Position
Barometric Pressure
Boost Pressure
Coolant Level
Engine Coolant Temperature
Engine Hours
Engine Load
Engine Oil Pressure
Engine Oil Temperature
Engine Percent Torque
Engine Speed
Fuel Rate
Fuel Temperature
Injection Control Pressure
Intake Manifold Temperature
Mileage
Vehicle Speed
Power Take Off (PTO) Mode



Brakes Parameters
Front Axle Speed
Relative Speed, Front Axle, Left Wheel
Relative Speed, Front Axle, Right Wheel
Vehicle Speed
Brake Switch



Electrical System Parameters
Alternator Potential (Voltage)
Alternator Speed
Battery Potential (Voltage)



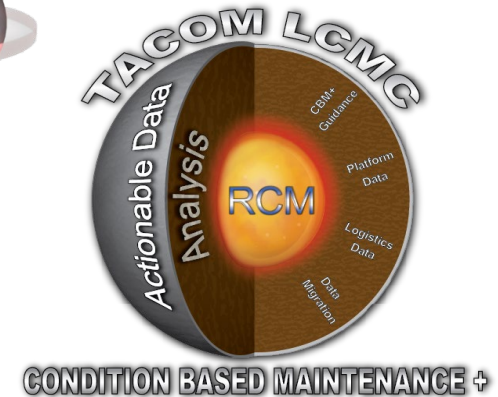
Transmission Parameters
Transmission Oil Temp
Transmission Range Attained
Transmission Range Selected
Transmission Output Shaft Speed
Input Shaft Speed
Transmission Actual Gear Ratio
Transmission Current Gear
Transmission Selected Gear
Torque Converter Lockup Engaged

# CBM+ Accomplishments

## POSITIVE IMPACT TO READINESS AND COST SAVINGS

### Key Accomplishments

- Accurate & Autonomous OPTEMPO
- Reduced Time to Repair
- Optimized Scheduled Maintenance
- Warranty Claims
- Accident Reconstruction
- Hawthorne Effect
- Fleet Management





# Measure and Track Success

- Track cost savings and ROI
- Track positive impact to readiness
- Reduced time to diagnose (MTTR and MTBF)
- Logistics Product Updates
- Equipment Modifications and Engineering Changes
- Overhaul reduction
- Divestiture prioritization (identification of bad actors)

# Implementation Focus

Instrumentation of Vehicles

Establish and Field the Architecture – CBM+ at Scale

Identify platform agnostic hardware and software solutions

Integrate within current Enterprise Resource Planning Tools to implement data-driven decision making

Workforce Development

# Questions